

## REMARKS

By an Office Action dated January 9, 2004 in the file of this application, the Examiner rejected all of the then pending claims in this application. By this response, the applicants respond to each grounds of rejection presented in the Office Action. Based on this response, reconsideration of the merits of this patent application is respectfully requested.

The first ground of rejection imposed by the Examiner was under 35 USC §112, first paragraph based on the written description requirement. The examiner argues, in essence, that the applicant's claims are too broad to be supported by the written disclosure. The applicant respectfully disagrees.

As noted by the Examiner, the applicants data demonstrate the 3-HP can be made in bacteria using two enzymes, one produced by the *dhaB* genetic element and the other one of four exemplified aldehyde dehydrogenase enzymes. As noted by the Examiner, there is no particular structural relationship among the four aldehyde dehydrogenase enzymes other than the inherent fact that the enzymes can dehydrogenate an aldehyde. The applicants submit that these very fact support the concept that a full written description of the invention of claims 3 and 6 is contained within the specification. The applicant has demonstrated, for the aldehyde dehydrogenase element of the invention a representative number of examples to be entitled to genetic coverage for this claim element. Note that four aldehyde dehydrogenases were used in the examples in the application, and that one was mammalian (human), one was from yeast, and two were from bacteria, none being from the same host as the *dhaB*. From this data, one of ordinary skill in the art would surmise that any aldehyde dehydrogenase that could be produced in the bacterial host would work in the method of the present invention. There is nothing unique in the combination of the *dhaB* and any one of these exemplified enzymes. In fact, the evidence on the record clearly suggests that the applicants have established that many aldehyde dehydrogenase enzymes will work. For that reason, the applicants assert that the scope of the claims as presently presented is appropriate to the written description of the specification.

It is worth a brief mention that while the cited prior art describes 3-HP as an "unstable chemical", that description is not the applicant's experience. Contrary to the Examiner's comments, the applicants have provided data of accumulation of 3-HP in the fermenter, with the relative amounts of 3-HP produced for each aldehyde dehydrogenase being listed at the top of page 16 of the specification. As it may be of interest to the Examiner, in fact one can buy 3-HP today as a commercial product. The web site of [tciamerica.com](http://tciamerica.com) lists the chemical

for sale, which the Examiner can verify by doing a search of the on-line catalog of that company by the CAS registry number for 3-HP (503-66-2). The description of this molecule as unstable by the patentee of the cited art is not consistent with the applicant's experience or the current commercial marketplace.

In the Office Action, there is a second rejection under 35 USC §112, first paragraph, also for claim breadth. The comments above are also deemed relevant to this rejection. The applicants assert that the data in the specification does make predictable the fact that the *dhaB* gene product will work with other aldehyde dehydrogenase which can be produced in a microbial host to make 3-HP. The breadth and diversity of the four working examples shown by the applicants supports this assertion.

The Examiner next rejected claim 4 under 35 USC §112, second paragraph, for the erroneous citation to ALD2. This rejection appears to have been correct. The applicant has an editorial error in claim 4, repeated in claim 12, that referenced ALD2 instead of the proper ALD4 and also referenced ALDH4 rather than the proper ALDH2. The citations have been corrected above, and it is believed that these corrections will cure this informality.

The last ground of rejection was under 35 USC §102 based on a patent to Skraly and Peoples. The Examiner asserts that the Skraly patent shows a method of producing polyhydroxyalkanoates, which it does. The Examiner asserts that Skraly does this by a process in which diols are converted into 3-HP from glycerol or glucose. The applicants assert that this latter assertion by the Examiner is just not so.

The applicants read the Skraly patent as concerned with the fermentation of polymers, not the fermentation of free monomers. Nowhere in the Skraly patent can the applicants find a teaching of the production of free 3-HP. In fact, as cited by the Examiner, Skraly seems to consider 3-Hp an unstable molecule not worthy of independent production. If anything, Skraly teaches away from the production of free 3-HP.

The Skraly patent does mention the cloning and overproduction of aldehyde dehydrogenase enzymes. However, these enzymes are used by Skraly as a step in the pathway for producing a polymer. No production of free 3-Hp is disclosed in Skraly anywhere.

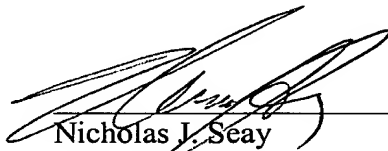
For a reference to be cited against the claims of an application, the reference must teach within its four corners all of the limitations of the applicants' claims. Here the patent to Skraly does not teach the production of 3-HP as an independent molecule. Therefore, this reference cannot anticipate the claims of this application, where the production of 3-HP is

specifically recited. Accordingly it is requested that this rejection be reconsidered and withdrawn.

The applicants have also rewritten claims 4-5 and 11-12 to be in independent form so that they may be expressly allowed.

A separate petition for extension of time for two months is submitted herewith so that this response will be considered as timely filed. A separate fee transmittal to charge the fee to Deposit Account No. 17-0055 is enclosed as well.

Respectfully submitted,



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